

US EPA RECORDS CENTER REGION 5



508881

Explanation of Significant Differences

**Ten-Mile Drain Superfund Site
St. Clair Shores, Michigan**

September 2016



I. INTRODUCTION

Site Name and Location

The Ten-Mile Drain (TMD) site (MIN000510063) is located northeast of the City of Detroit on the western shores of Lake St. Clair in St. Clair Shores, Macomb County, Michigan.

The site is located in a mixed commercial/residential area near the intersection of Bon Brae Street and Harper Avenue. It includes a portion of the TMD storm sewer system, which consists of concrete sewer pipes and backfill material surrounding the pipes in a utility corridor 15 feet below ground surface (bgs). The site is currently known to encompass several blocks where polychlorinated biphenyls (PCBs) have been found in the storm sewer system in significant concentrations, as well as areas where the PCBs are known to have migrated through the storm sewer and discharged into the Lange and Revere Street canals connected to Lake St. Clair (see Figures 1 and 2). These canals, which provide recreational boating access to Lake St. Clair for approximately 125 homes, are private property and are used for recreational boating, swimming, and fishing.

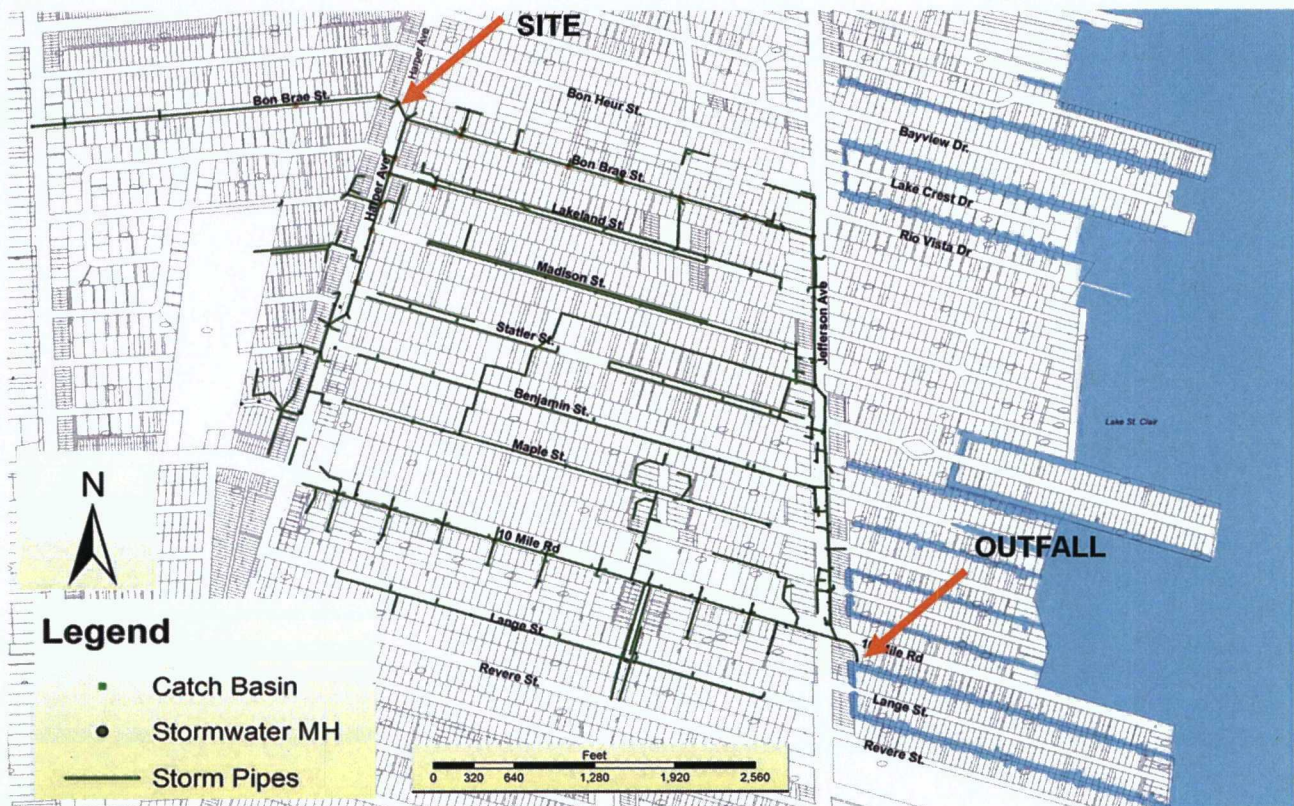


Figure 1. Ten Mile Drain Storm Sewer System



Figure 2. Lange and Revere Street Canals (outfall)

Statement of Purpose and Statutory Basis

The U.S. Environmental Protection Agency (EPA) is issuing this Explanation of Significant Differences (ESD) to document significant differences in certain components of the second selected interim remedy for the Ten-Mile Drain Superfund site. The second selected interim remedy for the site was set forth in a Record of Decision (ROD) signed on May 16, 2014. EPA is issuing this ESD in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), 42 U.S.C. § 9617(c), and Section 300.435(c)(2)(i) of the National Contingency Plan (NCP), 40 C.F.R. § 300.435(c)(2)(i).

An ESD is appropriate when the lead agency determines that the remedial action at a site differs significantly in scope, performance, or cost from the selected remedy, but the change to the remedial action does not fundamentally alter the selected remedy. The purpose of this ESD is to document the differences between the remedial action taken and the remedial action set forth in the 2014 interim ROD, and to explain the reasons for such changes.

Summary of Circumstances Necessitating this ESD

The 2014 interim ROD selected the removal and replacement of two vaulted manhole structures – M7179 and J01 – in the TMD storm sewer system along with PCB-contaminated bedding and backfill materials. During the excavation of the M7179 manhole vault, PCB-containing oil was observed flowing from between the cured-in-place pipe (CIPP) liner and the 48-inch-diameter reinforced concrete pipe (RCP) that

extends under Harper Avenue (see Figure 3). Based on this new development, and to prevent recontamination of areas that had just been cleaned up, EPA expanded the interim action to include removal and replacement of the 120-foot length of RCP between manhole vaults M7179 and J01, along with the bedding materials surrounding the pipe. The excavation of the RCP led to several other modifications to the remedy components described in the 2014 interim ROD.

This ESD discusses the following four modifications to the selected remedy: (1) the excavation and replacement of the 120-foot length of RCP and impacted bedding materials beneath Harper Avenue between manhole vaults M7179 and J01; (2) the use of an alternate manhole vault lining method; (3) installation of two anti-seep collars; and (4) a reduction in the number of extraction and monitoring wells. In addition, this ESD also documents the use of an onsite carbon filtration system to treat water pumped from the open excavation before discharging it back to the storm drain. This was required due to heavy rainfall during construction that resulted in a large quantity of PCB-contaminated water exceeding Toxic Substances Control Act (TSCA) levels. While the onsite carbon treatment system was not listed as a major element of the selected interim remedy, the quantity of water that required treatment and the associated cost increase is worthy of documentation in this ESD.

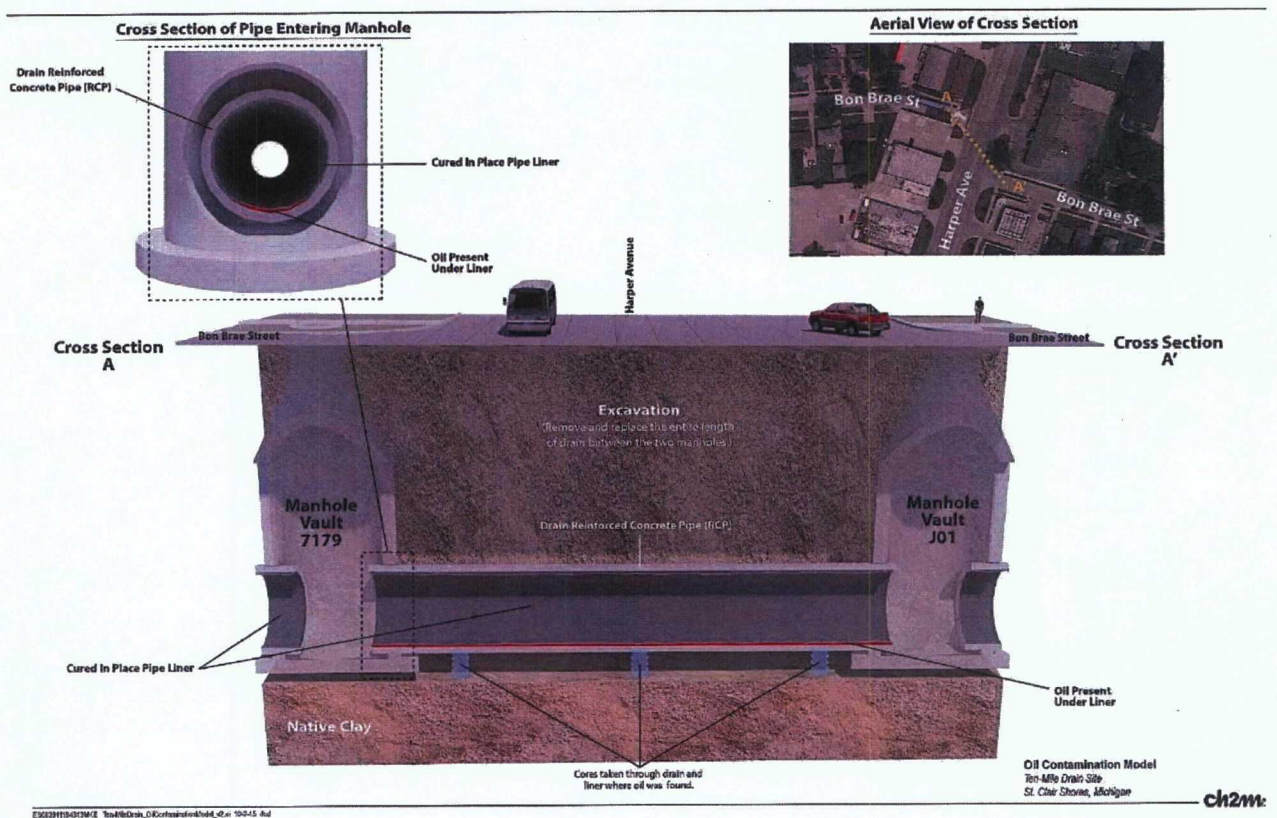


Figure 3. Manhole Vault Structures and RCP beneath Harper Avenue

Lead and Support Agencies

EPA is the lead agency and the Michigan Department of Environmental Quality (MDEQ) is the supporting agency for CERCLA activities at this site.

Agency Determination

EPA, in consultation with MDEQ, has reviewed the changes to the Ten-Mile Drain site second interim remedial action in accordance with CERCLA and EPA policy and guidance, and has determined that the changes to the remedial action selected in the ROD are significant, but do not fundamentally alter the overall site remedial action with respect to scope, performance, or cost. The revised interim remedy complies with the NCP and the statutory requirements of CERCLA and will continue to contribute to the long-term protection of human health and the environment. Thus, it is appropriate to issue an ESD to document the changes.

Administrative Record

This ESD and all of the technical information and data relating to it shall become part of the administrative record for the site in compliance with Section 300.825(a)(2) of the NCP, 40 C.F.R. § 300.825(a)(2). The administrative record for the Ten-Mile Drain Superfund site is available for viewing at the following information repository locations:

St. Clair Shores Public Library
22500 E. 11 Mile Rd
St. Clair Shores, IL 48081
(586) 771-9020
Call for Hours

EPA Region 5 Records Center
77 W. Jackson Blvd.
Chicago, IL 60604
(312) 353-1063
Mon-Fri - 8 am to 4 pm (CST)
Call for appointment

II. SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

Site History

Several removal actions and associated investigations have taken place since PCBs were first discovered in the Lange and Revere Street canal in 2001. This section of the ESD provides the history of the site and a brief discussion of the various removal, remedial, and enforcement activities and associated investigations that have been conducted at the site.

1.1 History of Early Removal Activities and Investigations (2001-2006)

In July 2001, sediment samples were collected by the Macomb County Public Works Office (MCPW) as part of a permit application process for a proposed dredging project in the Lange and Revere Street canals. The analytical results were submitted to the U.S. Army Corps of Engineers, who then notified MDEQ based on the elevated levels of PCBs in the sediment. In December 2001, MDEQ conducted an investigation of the TMD storm sewer system and confirmed there was an upstream source of PCB contamination in the drain. As a result of MDEQ's investigation, MCPW sampled and confirmed the presence of PCBs in both the Lange and Revere Street canals and TMD storm sewer system.

EPA's removal program initiated a time-critical removal action at the site in August 2002 and completed the work in July 2004. During the removal action, high concentrations of PCB-contaminated sediments were removed from the TMD storm sewer system, the Lange Street canal, the connecting channel between the Revere and Lange Street canals, and a segment of the western end of the Revere Street canal. All waste was transported for disposal at approved off-site facilities. Specifically, the following activities were completed:

- Development and implementation of a site-specific Health and Safety Plan and Air Monitoring Plan;
- Development and implementation of a Site Security Plan including guard services, installation of signs on gates, and temporary fencing;
- Dewatering the TMD storm sewer system and removal of all sediments via confined space entry and high-pressure jet-vacuum truck;
- Construction of an on-site water treatment system and treatment of approximately 2.5 million gallons of water. Water treatment system operations included the dewatering of the Wahby Park Pond and sampling of the sediments;
- Installation of sheet piling to create excavation cells, and replacement of any sections of sea walls that failed after dewatering due to removal activities;
- Excavation of all sediments with total PCB concentrations exceeding 10 parts per million (ppm) from the Lange Street canal, the connecting channel between the Lange and Revere Street canals, and a segment of the western end of the Revere Street canal, with the goal of achieving an average sediment concentration of 1 ppm;
- Development and implementation of a confirmation sampling plan during the excavation phase of the project. In the event that the confirmatory sampling demonstrated that the 1 ppm goal was not met, additional excavation and confirmatory sampling was required;
- Off-site disposal of all PCB-contaminated sediments at an EPA-approved disposal facility in accordance with the EPA Off-Site Rule (40 CFR § 300.440); and
- Restoration of any areas damaged due to EPA's actions.

In total, EPA disposed of approximately 5,900 tons of PCB-contaminated materials and 18,000 tons of non-hazardous materials. Post-removal site controls were agreed to by MCPW. In April 2004, MCPW completed the re-cleaning of the drain and the outfall area where the TMD discharges into the canals.

In June 2004, MCPW initiated quarterly PCB sampling in the drain. The results showed that PCBs were still present at levels as high as 1.3 ppm in the drain water. At the time,

such concentrations were believed to be residual contamination. In July 2004, MCPW initiated an assessment of the Harper Avenue and Bon Brae Street area. In September 2004, MCPW completed the second round of quarterly PCB sampling and detected PCBs in sediment at the outfall of the drain at 770 ppm. In December 2004, MCPW conducted the third round of PCB sampling in the drain and detected PCB concentrations as high as 17,000 ppm. After the third round of sampling, MCPW initiated the installation of soil borings to sample the backfill surrounding the drain to determine if a source of PCBs was re-contaminating the drain. Results indicated that PCBs were present in backfill surrounding the drain at levels as high as 41,000 ppm. In January 2005, MCPW collected sediment samples from inside the drain near the intersection of Harper Avenue and Bon Brae Street and detected PCBs at extremely high total concentrations, up to 200,000 ppm.

In May 2005, EPA's removal program and MDEQ installed 64 additional soil borings in the suspected source area to better define the extent of PCB contamination. PCBs were detected in the sand and gravel backfill surrounding the drain and appeared centered in the area near the intersection of Harper Avenue and Bon Brae Street. The May 2005 investigation also revealed one surface soil area with total PCB concentrations of approximately 800 ppm. In the spring and summer of 2006, EPA conducted another removal action to address this area of surface soil contamination. Specifically, the following activities were completed:

- Excavation of shallow surface soils that contained total PCB concentrations above the MDEQ Part 201 Residential/Commercial Direct Contact criterion of 4 ppm, and restoration of the excavated areas;
- Repair of sea walls;
- Installation of monitoring wells and a large sediment trap to collect contaminated sediment at the outfall from the drain;
- Dewatering and jet-washing the targeted portion of the TMD system to remove sediment; and
- Installation of a CIPP liner in a portion of the sewers along Bon Brae Street and Harper Avenue to attempt to mitigate PCB infiltration from the backfill materials into the sewers.

2.2 City of St. Clair Shores and EPA Removal Activities (2007-2011)

In the fall of 2007, MDEQ provided a \$500,000 grant to the City of St. Clair Shores for further investigation and cleanup efforts. The City hired Environmental Consulting & Technology (ECT) as its contractor for this work. Four main tasks were performed under this grant: environmental sampling to monitor the conditions in and around the drain; installation and maintenance of monitoring wells along the drain; cleaning contaminated sediment from portions of the drain; and installation of two weirs within the drain to slow the migration of PCBs to the canals and Lake St. Clair. The weirs that were installed are half-circle metal structures approximately two feet high that act like small dams to collect PCB oil and contaminated sediment before the contaminants move into the canals.

In late 2009, ECT discovered oil inside the CIPP-lined portion of the sewer located at the Bon Brae Street and Harper Avenue intersection that contained concentrations of more than 80 percent total PCBs (i.e., more than 800,000 ppm). The City and ECT asked for assistance from EPA in addressing this almost-pure PCB oil in the drain, and identified immediate and time-critical concerns for the need to eliminate the potential for PCBs to migrate down the storm sewer and threaten the Lange and Revere Street canals. In March 2010, EPA mobilized its removal action contractors to the site to initiate removal action activities, which included the following:

- Dewatering and high-pressure jet-vacuuming of the sewer along Bon Brae Street and down Harper and Jefferson Avenues to remove PCB oil and sediment;
- Stabilization, transportation, and off-site disposal of the PCB-contaminated materials;
- Installation of temporary weir structures in 15 manhole locations to allow sediment collection points. The 15 weirs were in addition to the two weirs previously installed in the drain system by the City of St. Clair Shores; and
- A geophysical survey of the area near the sewer where contamination was present, and advancement of soil borings and collection of soil samples from suspected source areas.

Based on subsequent environmental sampling results collected by the City, EPA conducted another removal action at the site in late February 2011 to remove PCB oil from the drain. Absorbent snares were used to swipe and soak up the oil that had collected behind the weirs. A total of six of the seventeen weir locations required cleanout and one 55-gallon drum of soiled absorbent snares was collected for disposal. Clean snares were then attached to weighted chains and left directly upgradient of selected weirs to allow any new incoming oil to collect on them and to support future sample collection and removal efforts. Because PCB oil continued to infiltrate the drain and as part of its environmental monitoring activities, in April 2011 the City inspected the absorbent snares, removed soiled snares, and placed clean snares behind the weirs where needed. MDEQ's grant to fund the City of St. Clair Shores' investigations and cleanup efforts at the Ten-Mile Drain site expired in September 2011.

2.3 EPA and MDEQ Remedial Activities (2008-Present)

MDEQ conducted a Site Investigation in July 2008 to document and obtain sufficient data to support listing the site on the National Priorities List (NPL). EPA proposed the site for the NPL in March 2010 and finalized the site on the NPL in September 2010.

In September 2011, EPA issued an interim ROD to address the high concentrations of PCB oil and contaminated sediments that continued to accumulate behind the 17 weirs and in the sediment trap at the outfall. The interim remedial action selected in the 2011 ROD consists of monthly source control activities to handle the accumulation of PCB contamination behind the weirs and at the outfall of drain into the canals, in an effort to prevent additional PCB contamination from reaching the canals. Source control activities include monitoring, placement of absorbent snares to adsorb oil and slow or stop the

movement of contamination, and periodic removal and proper disposal of saturated snares and PCB-contaminated sediment, if needed. These interim source control activities are ongoing and will continue for as long as necessary until a final remedial action for the site is selected and implemented.

In August 2011, as part of the site-wide remedial investigation (RI) and feasibility study, EPA designed and conducted a sediment sampling project in the Lange and Revere Street canals to delineate the nature and extent of PCB contamination in the canal sediments. Approximately 100 samples collected from the surface of the sediments and 40 samples collected from deeper sediments were analyzed for PCBs by an EPA mobile laboratory to characterize the contamination in the canals and provide information to explain the elevated PCB levels found in fish caught in the canals. Based on the findings of the 2011 sampling event, the highest total PCB concentrations in sediment (100 ppm to 570 ppm) are located near the outfall of the TMD storm sewer system. Overall, EPA found that PCB concentrations decrease with depth and distance from the outfall. PCB concentrations are significantly lower in the deeper, clay sediment materials than the surficial, silty sediment materials. EPA found the highest PCB concentrations on the western ends of the canals, which indicates that PCBs continued to discharge out of the TMD outfall into the Lange and Revere Street canals following the 2002-2004 removal action that excavated contaminated sediments from the canals.

In April 2011, EPA conducted source area investigation field work in an attempt to find the source of the high PCB concentrations that continue to infiltrate the TMD storm sewer system. The investigation focused on the sanitary sewer, gas, and water main utility corridors that crossed the TMD utility corridor, which potentially could provide preferential pathways for PCB contamination to migrate into the drain. Utility lines are typically set in corridors backfilled with stone and other “loose” materials through which contamination could easily migrate. The native materials at the Ten-Mile Drain site are generally very tight clays which do not allow easy migration of contamination. EPA believed that if contamination was present within these other utility corridors that cross the TMD system, the contamination could then be traced back to the potential source area. The source area investigation fieldwork also included additional sampling within the TMD utility corridor.

EPA finalized its *Source Area Investigation Report* in January 2012. The results of the extensive investigation found significant concentrations of PCB-impacted soil within the TMD utility corridor backfill materials adjacent to four vaulted manhole locations: J01, M7179, M4335, and M7183. Also, PCB oil droplets were observed in core samples collected adjacent to vaulted manholes J01 and M7179. Importantly, only very low PCB concentrations were found in the backfill materials of the other utility corridors, ruling out the sanitary sewer, gas, and water main utility corridors as a source or conduit for the high PCB concentrations found at the Ten-Mile Drain site. Additionally, PCBs were found in all depth intervals of the backfill materials near the intersection of Bon Brae Street and Harper Avenue, between Bon Brae and Lakeland Streets. The information gained during the investigation lead EPA to believe that a historical release (or releases) of PCBs entered the storm sewer system, either from a surficial spill or illegal dumping activities, and that the PCBs, which are denser than water, sank to the lowest points in the system – the vaulted manhole locations. Based on all available information, it appeared

that the PCBs in the stone bedding and backfill materials at the base of the vaulted manholes were serving as the continuing source of contamination to the TMD storm sewer system and the Lange and Revere Street canals. EPA does not believe there is an ongoing surficial source of PCB contamination that continues to enter into the drain. EPA continues to follow all leads and critically examine all data gathered during its investigation work at the site.

In April 2013, EPA began its site-wide RI field work. EPA collected samples from other areas potentially impacted by the site, including soils from residential and commercial properties along the canals and near the intersection of Bon Brae Street and Harper Avenue. On April 16, 2014, EPA signed an Action Memorandum to conduct a time-critical removal action at ten properties, including eight public rights-of-way, one residential yard, and part of a commercial property to prevent human exposure to elevated levels of PCBs in surface soil at residential properties. The removal action began on May 27, 2014, and was completed on July 10, 2014. The activities completed as part of this removal action included the following:

- Development and implementation of a site-specific work plan, health and safety plan, and sampling and analysis plan;
- Initial site setup and construction of an exclusion zone;
- Perimeter air monitoring and collection of perimeter air samples;
- Excavation and verification sampling of residential soil;
- Backfilling of excavations and regrading of residential properties to original or improved grades;
- Application of sod and installation of trees to excavated areas and planting of new trees;
- Implementation of site security measures and demobilization from site.

In August 2015, additional RI sampling was conducted focusing on the former Martin Drain (also known as the Old Martin Drain). The Old Martin Drain was a former open, above-ground storm water drain. The objective of the sampling was to determine if the Old Martin Drain was previously a pathway for PCB contamination. EPA completed approximately 34 borings on Bon Brae Street, B Street, and Jefferson Avenue and a total of 72 samples were analyzed for PCBs. Nineteen of the 34 cores sampled contained no detectable concentrations of PCBs. Out of the remaining cores, the majority were below 3.5 ppm, with 2 sample results exceeding 50 ppm. Based on the overall sample results, EPA determined that the Old Martin Drain was most likely not a pathway for PCB contamination migration at the Ten-Mile Drain site.

Second Selected Interim Remedy

EPA issued a second interim ROD for the Ten-Mile Drain site on May 16, 2014. The second interim remedial action selected in the ROD addressed the PCB contamination in the bedding and backfill materials at the base of vaulted manholes M7179 and J01 in the TMD storm sewer system. The major elements of the selected interim remedy included the following:

- Excavation and removal of the vaulted manholes and surrounding impacted backfill materials at M7179 and J01, and proper off-site disposal of the contaminated materials;
- Dewatering and temporary rerouting of the stormwater in the TMD system prior to excavation work;
- Installation of two new vaulted manholes at M7179 and J01, including replacement of the stone bedding and backfill materials, and installation of a weir within each new vault to facilitate monitoring;
- Installation of a flexible synthetic liner on the open excavation surfaces prior to installation of the new vaulted manholes, to separate the existing soils from the new clean bedding and backfill materials;
- After installation of the new vaulted manholes, a flexible synthetic liner will be affixed to the outside of each new manhole vault and the piping using batten strips;
- Treatment of excavated impacted soils through solidification prior to disposal by mixing a reagent (cement kiln dust) to convert the sludge to a granular solid and improve the handling characteristics of the waste;
- Installation of two monitoring and recovery wells on either side of the two new vaulted manholes for a total of four monitoring and recovery wells. The monitoring and recovery wells will be placed in the utility trench adjacent to the newly installed structures.
- Quarterly monitoring of both the utility trench water outside the drain through the monitoring and recovery wells and the water inside the drain, and extraction of PCB oil using the monitoring and recovery wells if buildup of oil occurs against the new liners of the replaced vaulted manholes. EPA will evaluate the effectiveness of its sample collection methods as well as the frequency of the monitoring and sampling events and adjust them as necessary; and
- Use of institutional controls to prevent actions that compromise the remedy.

The response actions selected in the 2014 interim ROD were intended to address the highly-impacted backfill and bedding materials at the two manholes that EPA believed were serving as a continued source of PCBs to the rest of the TMD system and the Lange and Revere Street canals. The interim remedial action was intended to serve as a source control action while EPA continues through the remedial process and until a final long-term remedial action is selected and implemented at the site. The ROD noted that the interim remedy does not fully reduce the risks to human health and the environment that may already exist due to the known recontamination of the sediments in the Lange and Revere Street canals, and that the objective of the interim action is to mitigate contaminant migration and prevent further environmental degradation, thereby contributing to the long-term protection of human health and the environment.

III. BASIS FOR THE ESD

EPA started the construction work to remove the two manhole vault structures in early June 2015. During the excavation of manhole M7179, oil (which was confirmed to be PCB oil) was observed between the CIPP liner and the RCP (see Figure 4).

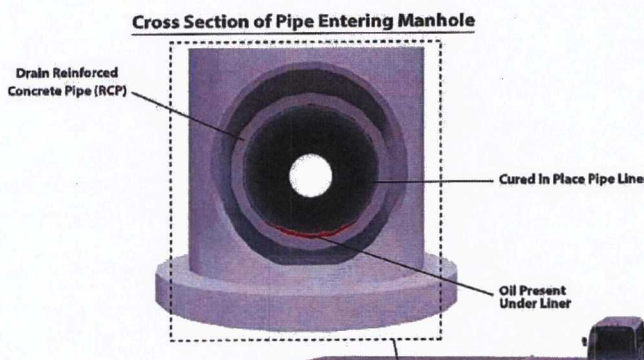


Figure 4. Cross Section of Pipe entering Manhole

EPA contractors cut back the CIPP liner that was installed inside the RCP during the 2006 removal action, and oil began to flow out of the end of the pipe into the M7179 open excavation (see Figure 5).



Figure 5. PCB oil observed flowing from pipe beneath Harper Avenue.

Borings collected through the liner and RCP confirmed the presence of PCBs, with the highest sample result being 78,700 ppm. This new information obtained during implementation of the remedial action led EPA to expand the project and remove the 120-foot length of pipe between the two manhole vaults, along with impacted bedding materials. EPA determined that the expansion of the project was necessary and consistent with the intent of the 2014 interim ROD. Information supporting this change is included in Supplement 8 to the administrative record (see attachment).

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The response actions selected in the second interim ROD were intended to address the highly-impacted backfill and bedding materials adjacent to the two manhole vaults that EPA believed were serving as a continued source of PCBs to the rest of the TMD system

and the Lange and Revere Street canals. As discussed earlier in this ESD, PCB oil flowed into the open excavation from between the liner and pipe during the excavation of manhole vault M7179. This prompted EPA to expand the interim remedial action to include the removal and replacement of the 120-foot length of RCP running between the two manhole vaults, along with the underlying materials. The expanded remedial action is consistent with the remedial action objectives in the 2014 ROD and necessary to prevent further PCB migration to the Lange and Revere Street canals and further environmental degradation.

Changes to the Components of the 2014 Interim Remedial Action

Table 1 below compares the components selected in the interim ROD to the remedial action as implemented in 2015. Each of these components is further discussed below the table.

Table 1: Changes to Ten-Mile Drain Site Second Interim Remedial Action

Remedy Component in 2014 ROD	Change in Remedy as Implemented
<i>[Removal of RCP not included in ROD-selected remedy]</i>	The 120-foot length of RCP beneath Harper Avenue between vaulted manholes M7179 and J01, along with underlying materials, was removed and replaced
After installation of the new vaulted manholes, a flexible synthetic liner will be affixed to the outside of each new manhole vault and the piping using batten strips	After installation of the new vaulted manholes, a spray-on epoxy liner was installed on the interior of each new manhole vault and the piping
Installation of two monitoring and recovery wells on either side of the two new vaulted manholes for a total of four monitoring and recovery wells	One monitoring and recovery well was installed adjacent to each of the new vaulted manhole structures for a total of two monitoring and recovery wells
<i>[Installation of anti-seep collars not included in ROD-selected remedy]</i>	Two anti-seep collars were installed to prevent subsurface migration of PCB contamination back into this portion of the TMD storm sewer system.
<i>[On-site treatment of excavation water not listed as major element of ROD-selected remedy]</i>	An on-site carbon filter filtration system was used to treat large volumes of PCB-contaminated water pumped from the excavation before discharge back to the storm sewer.

Removal of RCP beneath Harper Avenue

The response actions selected in the 2014 interim ROD were intended to reduce infiltration of PCB oil and contaminated utility trench water into the TMD storm sewer pipe by removing and replacing two vaulted manhole structures along with the highly-impacted bedding materials. As described earlier in this ESD, the release of PCB oil from the end of the RCP during the excavation of M7179 prompted EPA to expand the remedial action by removing and replacing the 120-foot length of contaminated pipe. Remedial activities were temporarily put on hold from September 29 to October 28,

2015, with the exception of storm water management, while EPA secured additional funding, completed required contracting activities to cover the expanded work, and coordinated with local authorities regarding the temporary closure of Harper Avenue. The construction work was then substantially completed on November 23, 2015.

Spray-on Epoxy Interior Liner

The interim ROD specified that after the installation of the new vaulted manholes, a flexible synthetic liner would be affixed to the outside of each new manhole vault and the piping using batten strips. The remedial design called for an XR-5 geomembrane liner that can be prefabricated into large panels to limit field welding, and that is flexible and resistant to hydrocarbons. During the remedial action, the external synthetic liner was replaced with a spray-on epoxy interior liner because it created a better seal between the newly-constructed manhole vaults and the pipe beneath Harper Avenue. A portion of the CIPP liner installed in 2006 remains inside the TMD storm sewer drain, as depicted in Figure 6. The epoxy spray was used to fill the annular space between the CIPP liner and the pipe to seal the gap and stop water flow and PCB migration from entering the newly-constructed vaults and pipe.



Figure 6. Location of existing CIPP liner and Anti-Seep Collars

Monitoring and Recovery Wells

The interim ROD required the installation of two monitoring and recovery wells on either side of the two new vaulted manholes for a total of four monitoring and recovery wells. The interim ROD considered the possibility that, due to the installation of the XR-5 liner

on the outside of the vaulted manhole structure, mounding of water or PCB-contaminated oil within the utility corridor could occur. If mounding did occur, the wells would serve to trap the PCB oil in the sump, and the PCB oil could then be removed during the next sampling event. During the remedial action, EPA installed only one well next to each of the new vaults, for a total of two monitoring and recovery wells. As described below, this change was made due to implementability issues, safety concerns, and as a result of the change in liner described above.

Two municipal water lines are located on the east side of M7179. As a result, the location of the new M7179 vaulted manhole structure was shifted slightly to the west to provide for a safer and more accessible area for installation. Because of the final location of the newly-installed structures and their proximity to underground street lighting power lines, there was little or no room to safely position a second well adjacent to each manhole vault. In addition, the replacement of the XR-5 exterior liner with the spray-on epoxy interior liner removed the potential for mounding of water or PCB-contaminated oil within the TMD utility corridor. For these reasons, EPA decided that a total of two monitoring and recovery wells would provide sufficient data for future monitoring activities.

Anti-Seep Collars

Anti-seep collars were not a component of the 2014 interim remedy. During the installation of the new RCP, EPA installed two anti-seep collars in the TMD utility corridor to prevent subsurface migration of PCB contamination back into this portion of the TMD storm sewer system (see Figure 6). The anti-seep collars were installed as an extra precautionary measure. In the event that PCBs continue to travel through the backfill within the TMD utility trench, the anti-seep collars are designed to help prevent the contamination from reaching the clean backfill material surrounding the RCP beneath Harper Avenue.

On-Site Carbon Treatment System

The interim remedy in the 2014 ROD addressed the need to design a storm water diversion system to temporarily dewater and redirect storm water flow around the excavation areas, but did not require an onsite carbon treatment system. Storm water management required water to be pumped from upgradient of the excavations to down gradient, as well as daily maintenance pumping of the TMD at the outfall to keep excavation areas dry and water levels manageable in the drain. Some water from precipitation events would enter the excavations via sheet-flow or subsurface infiltration during/following the event. Water entering the excavation was handled as TSCA material due to contact with TSCA-level PCBs.

Initially, excavation water was pumped to frac tanks where it was stored, tested, characterized, and transported to an offsite treatment facility. In early July 2015, 36,000 gallons of water were disposed as TSCA waste at a unit cost of \$3.43 per gallon, totaling \$123,480. The on-site carbon treatment system was established to provide cost savings for the disposal of excavation water. Water was pumped from the excavations and processed twice by the treatment system prior to discharge into the TMD storm drain, under approval of the Macomb County Drain Commission. The only requirement for the discharge of the treated water was that it contain less than 3 micrograms per liter PCBs.

Sampling of the treatment-system effluent occurred once each day before discharge to the storm drain to confirm concentrations were below the required discharge limit. At the end of the project, a total of 336,502 gallons of water had been treated at an estimated unit cost of approximately \$0.64 per gallon (factoring in the rental cost of the treatment system and disposal of the carbon filters), for a total treatment cost of \$216,558. Use of the on-site treatment system resulted in significant cost savings, as the cost to dispose of all the water at the original unit cost identified above would have exceeded \$1.1 million.

Cost Difference

The approximate cost of the selected remedy as listed in the 2014 Interim ROD was an estimated present worth cost of \$3.9 million. The estimated capital cost was \$2.6 million and the estimated annual operation and maintenance (O&M) cost of \$76,866.

The total construction and oversight cost for the removal and replacement of the two vaulted manhole structures (the originally-selected action) was \$2,630,838. The additional cost for the removal and replacement of the RCP beneath Harper Avenue was \$1,461,206. Including design costs (\$182,000), the total capital cost for implementation of the interim action as revised by this ESD was \$4,274,044. The estimated annual O&M cost has not changed.

V. SUPPORT AGENCY COMMENTS

MDEQ has reviewed and supports the modification to the remedy described in this ESD. The letter documenting MDEQ support of these remedy changes will be added to the administrative record upon receipt.

VI. STATUTORY DETERMINATIONS

EPA has determined that the changes to the selected second interim remedy for the Ten-Mile Drain site are in accordance with Section 121 of CERCLA. The modified remedy will continue to contribute to the long-term protection of human health and the environment, complies with the federal and state requirements which are applicable or relevant and appropriate to the limited scope of the interim remedial action, and is cost-effective. In addition, all remedial action objectives for the interim remedial action remain unchanged. Because hazardous waste will remain on the site at levels that do not allow for unlimited use and unrestricted exposure, five-year reviews of the site remedy will continue to be required. The first five-year review for the site is due to be completed by April 10, 2017.

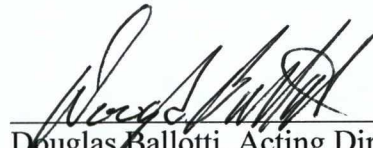
VII. PUBLIC PARTICIPATION COMPLIANCE

EPA shall publish a notice of availability and a brief description of this ESD in the local newspaper as required by the NCP at 40 C.F.R. § 300.435(c)(2)(i)(B). EPA will also place this ESD into the administrative record file and information repository located at the St. Clair Shores Public Library as required by the NCP at 40 C.F.R. § 300.435(c)(2)(i)(A).

VIII. DECLARATION AND AUTHORIZING SIGNATURE

EPA has determined that the changes to the 2014 Interim ROD described in this ESD are significant but do not fundamentally alter the selected interim remedial action with respect to scope, performance, or cost. Therefore, EPA approves the issuance of this ESD for the Ten-Mile Drain site and the changes to the interim remedial action stated herein.

Approved by:



Douglas Ballotti, Acting Director
Superfund Division
EPA, Region 5



Date

Attachment: Administrative Record Index, Supplement 8

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
TEN-MILE DRAIN SITE
ST CLAIR SHORES, MACOMB COUNTY, MICHIGAN**

**SUPPLEMENT 8
SEPTEMBER 12, 2016
SEMS ID: 929425**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	<u>479104</u>	9/10/15	Frey, R., U.S. EPA	Moynihan, C., U.S. EPA	Email re: Ten Mile Drain Interim Action- Remove and Replace Vaults	8
2	<u>479105</u>	9/10/15	Frey, R., U.S. EPA	Moynihan, C., U.S. EPA	Email re: Ten Mile Drain SSC Amendment Needed	3